

MISCELLANEOUS.

The Development and Change in the Form of the Horn of the Gnu
(*Connochetes gnu*). By Dr. J. E. GRAY, F.R.S.

MR. EDWARD GERRARD, jun., has lately purchased the dead body of a half-grown gnu which died shortly after it was imported.

This animal is most interesting as showing the very great change that takes place in the form and direction of the core of the horns and the horns themselves during the growth of the animal. The very young animal is figured by me in the 'Knowsley Menagerie,' but I am not aware that the half-grown animal has ever been described or figured.

The horns in this state, instead of being bent down on the sides of the front of the head, and flattened at the base, as in the adult, are erect, cylindrical, conical, slightly curved, rather lyriform, somewhat like the horn of *Damalis lunata*, but less curved. The horns are rather long, smooth, with a few indistinct rings near the base. The cores of the horns are 6 inches long, conical, erect, like the horns that cover them. The conical horn of this age forms the conical elongated tip to the adult horn.

At a certain age, the core and horn must be gradually bent backwards at the base, and at length they are produced and spread out laterally until, as in the adult animal, they are decumbent on the sides of the head, with a flattened base, recurved upward in the middle, and straight and conical at the end.

The horns on the skull of the half-grown, and especially of the nearly adult animal are so unlike those of the adult, that, if they had been received without the skin, it would be very excusable for a naturalist to have regarded them as a distinct genus intermediate between this genus and the lunated smooth-horned *Damalis*.

The cores of the horns of the young animal are somewhat like those of the skull of the adult Nylghau, but not angulated at the base, and more erect. When the horns are more developed and recurved, as they must be in the intermediate age between the young and the adult form, they must be very unlike those of any known genus of hoofed animals.

The skull of the gnu is peculiar for having the lateral wing of the basisphenoid extended into a broad pointed process in the back of the orbit. This process is only very indistinctly seen in the figures of the skull in the Catalogue of the Ungulata Furcipedæ in the Collection of the British Museum, t. 15. f. 4, 5.

On the Development of Cypris. By C. CLAUS.

The earliest observations on the development of the Ostracoda are due to M. Zenker. He found that at their birth the Cytherides are already provided with their two pairs of antennæ and two pairs of jaws, but that their abdomen is still but slightly developed and bears only three little appendages in place of the future limbs. In 1865 M. Claus published some observations on the larvæ of *Cypris*,

and he now completes this subject by describing all the phases of the development of two other species of that genus.

In contrast to the Cytherides, which present an advanced stage of development at their first appearance, the young freshwater Ostracoda on quitting the egg only possess the three anterior pairs of limbs, like the Nauplius of the Copepoda and Cirripedia. They are distinguished, indeed, from these by the presence of a bivalve shell, which protects them, and by the form of the limbs, of which the first two pairs at least already present the general forms of the corresponding members in the adults. Nevertheless, from a morphological point of view, we may justly regard the young *Cyprides* as Nauplii, especially as the third pair of members in these little creatures displays, both in form and function, peculiarities belonging to that larval form. As in other Nauplii, in fact, the third pair of limbs, corresponding to what will afterwards be the mandibles, do not fulfil the function of jaws, but that of locomotive organs. They are triarticulate reptatory feet, the extremity of which terminates in a strong bristle curved into a hook. In the older larvæ of the Copepoda the mandible buds as a masticatory process at the base of this limb; and so also the reptatory foot of the larvæ of *Cypris* presents at its base a crenulated apophysis, which, at the first change of skin, becomes converted into a mandible.

The larvæ of *Cypris* pass through a great number of stages before arriving at their ultimate form and at sexual maturity. M. Claus enumerates nine of these phases, separated from each other by a complete moult and by a change of the shell. The most striking character of the second phase is the budding forth of the mandibles above mentioned, accompanied by the metamorphosis of the locomotory foot of the preceding phase into a mandibular palpus. At this same period appear the rudiments of the maxillæ and of the first pair of final locomotory feet. The jaw-feet (maxillæ of the second pair) appear in the fourth phase, and consequently after the first pair of feet, which, however, come after them in the order of succession of the appendages. During the fifth phase, the jaw-feet play the part of locomotory feet, and terminate in a strong hooked bristle. In all phases of development there exists a pair of strong posterior terminal bristles. It is singular that the position and insertion of this bristle is modified in the course of development. Originally it is borne by the mandibular foot, then by the first foot-rudiment, then by the jaw-foot, and then by the locomotory foot of the first pair. The posterior pair of locomotory feet appear at the sixth phase. At the seventh all the extremities have nearly acquired their definitive form. This is the period at which the first rudiments of the generative organs make their appearance; but the sexual differences are not manifested until the eighth stage. The abdomen or postabdomen appears in the fifth phase, in a form exactly similar to that of the rudiments of the limb. This is also the period when the hepatic canals grow and descend into the shell.—*Schriften der Gesellsch. zur Beford. der ges. Naturw. in Marburg*, Bd. ix. 1868, p. 151; *Bibl. Univ.* tome xxxv. August 15, 1869, *Bull. Sci.* pp. 312–314.